

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

***Listing of Claims:***

1-7. (Canceled).

8. (Currently Amended) A system for etching a wafer, the system being capable of determining an endpoint of a plasma etching operation of a surface on a wafer, the surface of the wafer having features being etched, comprising:

a broad spectrum light source generating light within a range of wavelengths;

5 a lens system having an optical fiber aperture for receiving optical fibers;

a light source optical fiber bundle configured to transmit the light from the light source to the optical fiber aperture of the lens system, the lens system being configured to collimate light exiting the light source optical fiber bundle and project the light onto a spot on the surface of the wafer;

10 a spectrometer;

a detection fiber bundle comprising a plurality of detector fibers, the detection fiber bundle transmitting reflected light received by the lens system to the spectrometer, the reflected light being reflected from the surface of the wafer, the plurality of detector fibers being interleaved with fibers from the light source optical fiber bundle at the optical fiber aperture of the lens system, the plurality of detector fibers thereby receiving light reflected from the surface of the wafer back through the lens system, each detector fiber corresponding with a detector for detecting light that is steered toward a specific die area on the surface of the wafer and reflected from the surface of the wafer, the reflected light being detected by discrete detection region regions arranged to cover selected locations that are part of the specific die area on the surface of the wafer, each detection region being configured to generate generating a specific optical signal across a frequency band, one of the detection regions being configured to correlate with a model optical signal, whereby the endpoint of the

plasma etching operation ~~is based on~~ is determinable from one or more of the specific optical signals feedback from an identified one of the detected regions.

9-18. (Canceled)

19. (Currently Amended) A plasma processing system for use in semiconductor manufacturing, comprising:

a plasma processing chamber having an interior region, an exterior, and a viewport providing visual access to the interior region from the exterior;

5 a light source ~~configured to provide a broad beam light for directing through the viewport onto an active surface of a semiconductor wafer positioned within the interior region of the plasma processing chamber;~~

a lens system having an optical fiber aperture for receiving optical fibers;

10 a light source optical fiber bundle configured to transmit light from the light source to the optical fiber aperture of the lens system, the lens system being configured to collimate the light as it exits the light source optical fiber bundle and project the light onto a spot on the surface of the wafer;

a spectrometer;

15 a detection fiber bundle comprising a plurality of detector optical detector fibers, the detection fiber bundle transmitting reflected light received by the lens system to the spectrometer, the reflected light being reflected from the surface of the wafer, the plurality of detector fibers being interleaved with fibers from the light source optical fiber bundle at the optical fiber aperture of the lens system, the detector fibers thereby receiving the reflected light after passing back through the lens system each of the plurality of detector optical fibers having a detection end and an analysis end, each detection end being positioned in a fiber optic aperture of the lens system;

an imaging spectrometer, the imaging spectrometer receiving the analysis end of each of the plurality of detector optical fibers; and

20 a 2-D CCD detector array to wherein the spectrometer is configured to analyze a received optical signal the reflected light from each of the plurality of detector optical fibers;

~~wherein and identify an endpoint of plasma processing is determined based on an analysis the analysis of the received optical signal from the reflected light received by each of the plurality of detector optical fibers, wherein the analysis of the received optical signal reflected light from each of the plurality of detector optical fibers includes matching the received optical signal from each of the plurality of detector optical fibers to a model optical signal for a desired endpoint to plasma processing, and wherein each detection end of the plurality of detector optical fibers is directed toward a separate area of a specific die region such that the plurality of detector optical fibers is arranged to cover the specific die region.~~

30 20. (Canceled).

21. (Currently amended) The plasma processing system of claim 19, wherein ~~the spectrometer includes a CCD the CCD~~ detector array that provides a plot of at least one analyzed received optical signal from a corresponding one of the plurality detector optical fibers.

22. (Original) The plasma processing system of claim 19, wherein the plasma processing chamber is a plasma etch chamber.

23. (Original) The plasma processing system of claim 19, wherein the plasma processing chamber is a plasma deposition chamber.